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CENTRAL INTELLIGENCE AGENCY
NATIONAL FOREIGN ASSESSMENT CENTER

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MEMORANDUM

THE CONCLUSION OF INFCE: A PREVIEW

Summary

The final plenary session of the International Fuel Cycle Evaluation (INFCE) will be held in Vienna from 25 through 28 February. The meeting will mark the culmination of an unprecedented international effort that was launched at US initiative in October 1977 to assess alternative approaches to ensuring adequate nuclear energy capacities worldwide through 2025 on the basis of a variety of practical considerations, including the degree of proliferation risk involved. 25X1

Broad consensus proved impossible to achieve on many important questions. Hence, the documents that will be presented at the Plenary (eight working group reports, a summary paper, and, possibly, a press communique) make no attempt to resolve contentious issues, but simply list the different views that were expressed during the course of the Evaluation. 25X1

All the INFCE reports address the problem of possible diversion of weapons-usable material, and it is generally agreed that the Evaluation

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stimulated a higher degree of awareness of the dangers inherent in the spread of sensitive nuclear technology. Nonetheless, the basic thrust of the message that emerges from the final reports reconfirms the primacy that energy security considerations were accorded in the declaration adopted at the inaugural INFCE conference. 25X1

The twin issues of fuel availability and fuel assurances proved to be particularly controversial because of their direct relevance to the central debate over the need for plutonium-based fuel cycles and for such proliferation-prone facilities as reprocessing and enrichment plants. The INFCE reports cope with wide differences of opinion over fuel availability by offering high and low projections for both uranium production and the growth of nuclear generating capacity worldwide--a compromise that shrouds the longer term supply and demand picture for uranium in sufficient uncertainty to please the proponents of relatively early movement toward a plutonium economy. With respect to fuel assurances, the reports acknowledge the right of suppliers to require guarantees against possible misuse of the nuclear fuel and technology, but are basically critical of supplier practices involving unilateral (and, in some cases, retroactive) application of new proliferation-related conditions to existing contracts. 25X1

In dealing with the controversial plutonium fuel cycle question, the INFCE reports acknowledge that the economic advantage in recycling uranium or plutonium in conventional thermal reactors is likely to be marginal as long as ample supplies of uranium remain available at low cost. They also conclude that commercialization of the fast breeder reactor on any wide scale is not likely to be economically justified before the next century. Nonetheless, their findings tend, on balance, to strengthen the arguments of those who wish to preserve the options of reprocessing spent fuel and developing the fast breeder. 25X1

While most of the initial differences over the wording of the working group reports and the summary paper have been resolved, there are a number of factors that could stir controversy at the INFCE Plenary. Failure to reach agreement on the form and content of the press communique at the final Technical Coordinating Committee meeting on 22 February would, for example, leave those questions to be resolved by the Plenary as a whole. Such a development could complicate the process of selecting the Plenary Chairman as well as incline a number of INFCE participants to increase the political content of their final statements.

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Although the Evaluation's findings will not be binding on national governments, the conclusion of INFCE may represent something of a benchmark in the international dialogue over nuclear energy and nonproliferation. With the gains that can be claimed by both the proponents of energy security and those who attach equal or greater importance to nonproliferation, what seems to have emerged is a stand-off--one which, if not jarred by unforeseen developments, could endure for some time. Incremental change (e.g., introduction of improved safeguard techniques) will be possible, but most INFCE participants will probably be unwilling to move very far from the positions they have established and legitimized in the Evaluation documents. [redacted] 25X1

Background

The International Nuclear Fuel Cycle Evaluation (INFCE), which is to hold its final plenary session in Vienna at the end of this month, was launched at US initiative in October 1977, it has been an unprecedented multilateral effort to assess alternative approaches to the problem of assuring adequate nuclear energy capacities worldwide through 2025 from the standpoint of economic justification, technical feasibility, environmental impact, and proliferation risks.* While participation in the INFCE exercise has grown from 40 to 66 countries and from four to five international organizations--and while the evaluation has stimulated a higher degree of awareness concerning the dangers inherent in the spread of advanced nuclear technology--varying national interests and divergent perspectives have precluded reaching a consensus on several issues of particular concern to the US. [redacted] 25X1

That this would be the likely outcome was apparent from the outset. For one thing, in sharp contrast to the high priority attached to nonproliferation concerns by the US representative, the declaration adopted at the opening session asserted that measures taken to minimize the danger

[redacted] 25X1

of proliferation should not jeopardize national energy supplies or the development of nuclear energy for peaceful purposes. Moreover, at the insistence of a number of states with advanced nuclear power programs, additional provisos were included in the communique to the effect that INFCE was to be a technical exercise, not a political platform or a negotiating forum, and that its findings would not be binding on the participant. [redacted] 25X1

Passage of the Nuclear Non-Proliferation Act of 1978 (NNPA) subsequently reinforced the inclination of many participants to use INFCE as an opportunity to defend their national nuclear programs against the challenges posed by unilateral US policy moves. Their approach to presenting or accepting technical data and projections has been governed accordingly. In addition, far more effort has been devoted to mining existing studies than to breaking new technological or analytical ground. Even the exchange of purely technological ideas has been hampered by consideration of need to preserve industrial secrets and sensitive information. [redacted] 25X1

The various INFCE documents that have been drafted over the past year--the eight working group reports; the lengthy summary and overview report drawn up by the Technical Coordinating Committee (TCC); and the much shorter and still to be approved "press communique"--inevitably reflect the problems encountered in the course of the evaluation as a whole.* Explicit judgments on contentious issues are consistently avoided in favor of an objective presentation of differing views. Moreover, whether by design or accident, the full scope and significance of some of these divergent positions has been obscured by rather loose organizational format. The result is in large part a compilation of inconclusive "findings" that can be drawn on with equal facility by the proponents of a wide variety nuclear strategies.

[redacted] 25X1

*The Technical Coordinating Committee is composed of the 22 co-chairman of the eight INFCE working groups. See Figure 1. [redacted] 25X1

FIGURE 1

ORGANIZATION OF INFCE*

Working Group	Subject	Cochair Countries
1	Fuel and Heavy Water Availability	Canada Egypt India
2	Enrichment Availability	France Iran West Germany
3	Supply Assurances	Australia Philippines Switzerland
4	Reprocessing, Plutonium Handling, Recycle	Japan United Kingdom
5	Fast Breeders	Belgium Italy USSR
6	Spent Fuel Management	Argentina Spain
7	Waste Management and Disposal	Finland Netherlands Sweden
8	Advanced Fuel Cycle and Reactor Concepts	Republic of Korea Romania United States

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Yet even though the documents offer "something for everyone," few INFCE participants are likely to find them wholly satisfactory. Not only are critical points of contention left unresolved, but despite all efforts at caution and objectivity, some participants, including the United States, are likely to be troubled by certain judgments which can be inferred from the reports. Reservations on these matters--which for the most part focus on the four broad issues of fuel availability and assurances; the pros and cons of plutonium-based nuclear fuel cycles; the relative weight that should be attached to nonproliferation objectives; and the "special needs" of developing countries--underlie the sensitivities that have recently been exhibited over the wording of the proposed INFCE press communique. Since misgivings over one or more of these emotion-charged issues are also likely to determine the behavior of some countries during and after the final Evaluation plenary, a closer look at how these subjects are treated in the INFCE reports may be useful.* [redacted] 25X1

Fuel Availability and Assurances

The twin issues of fuel availability and assurances were among the most sensitive and difficult questions addressed by INFCE. This was because of their direct relevance to the debate over the need for plutonium-based nuclear fuel cycles and for such proliferation-prone facilities as reprocessing and enrichment plants. There were sharply divergent views among INFCE participants on the future role of nuclear power and, therefore, on the likely level of demand for uranium. There were also significant differences of opinion on the size of the world's uranium reserves. [redacted] 25X1

*The observations that follow are based on analysis of the latest draft versions of the INFCE reports that were available at time of writing. While few, if any, further changes are expected in the working group or summary and overview reports, the proposed press communique is heavily bracketed and could be significantly altered--or even scrapped --by either the TCC (which will meet for the final time on 22 February) or the INFCE Plenary itself. [redacted] 25X1

Most of these differences can be traced to the assumptions underlying existing government policies in the energy field. Many industrial nations such as Japan and those in Western Europe are convinced that nuclear power will have to assume an increasing role in their energy program if an unhealthy dependence on imported fossil fuels is to be overcome. Consequently, these nations argued that the demand for uranium will grow at a high rate in the coming decades. Other nations, particularly those (like the United States) that have ample energy reserves, looked at the issue of fuel availability from a different perspective and expressed considerable skepticism about high demand projections in view of the faltering nuclear programs in several industrial and developing nations. [redacted] 25X1

The final INFCE reports do not resolve this dispute over future nuclear fuel requirements. Indeed, political considerations made it necessary for the INFCE working groups to come up with a range of projections on the development of nuclear power programs and uranium reserves that would tend to prevent any participating nation or group of nations from complaining that its particular view of the future uranium market was not taken into account. [redacted] 25X1

The projections on the probable growth in nuclear power programs up to the year 2000 that were developed by INFCE Working Group 1 incorporated data from the OECD and International Energy Agency (IEA) that allow for the recent slowdown in nuclear programs in industrial nations.* This had the effect of moderating both the high and low-range projections for the balance of this century--a result that

**INFCE estimates of the future growth in nuclear power and global uranium reserves pertain essentially to the non-communist world. Countries with centrally-planned-economies failed to provide data relevant to these projections.* [redacted] 25X1

corresponded with the US position that rapid expansion should not be expected in the near future.** [redacted] 25X1

Projections for the 2000-2025 period are much less favorable from the standpoint of the United States and other nations that are skeptical about the future role of nuclear power. Energy-poor industrial nations, supported by those developing nations which are similarly anxious about energy supplies, were determined that the projections support the case for a major shift toward nuclear power in the next century. At their insistence, a high growth projection was based on a study prepared by the World Energy Conference (WEC) three years ago. Nuclear power is projected in that study to account for 50 percent of the world total of electricity in 2020. This methodology results in an INFCE prediction of 3900 GW_e (billion watts) installed capacity in 2025--a figure which represents more than a 30-fold increase over present generating capacity. The United States succeeded in moderating the low range projection for the post-2000 period by utilizing OECD predictions. However, even the low range for the expansion of nuclear power results in a figure that is 15 times greater than present installed nuclear capacity. [redacted] 25X1

INFCE estimates of uranium reserves reflect a similar effort to satisfy divergent national perspectives. Disagreement was particularly sharp concerning the impact that price levels have on production possibilities. Consequently, estimates of reserves were prepared for prices up to $80 per kilogram of U_3O_8 and for prices in the $80-130 range. While this approach yielded an extremely wide range of estimates about the supply of uranium, there was a consensus that actual uranium production from known resources will probably peak in the late 1990s under optimum conditions at approximately

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***The INFCE projections for installed nuclear capacity in 2000 range from a low of 850 GW_e (billion watts) to a high of 1200 GW_e. At the current time, the total capacity of all reactors in operation or scheduled for completion within the next decade amounts to over 400 GW_e.* [redacted] 25X1

110,000-120,000 tons per year.* Thereafter, annual production from presently known deposits and associated ore beds is expected to decline to about 16,000 tons by 2025. This figure is roughly equal to half of current uranium production. 25X1

No final judgments were made about the long-term supply-demand relationship in the uranium market because this will depend greatly on the type of mix of power reactors deployed during the next fifty years.** Nonetheless, the INFCE reports emphasize that there is a compelling need to exploit additional sources of uranium as well as to improve fuel utilization of reactors. The lifetime uranium requirements of reactors likely to be deployed in the next two decades exceed most of the INFCE projections concerning the supply of uranium that can be expected from "reasonably assured" uranium reserves. Substantial exploitation of what are currently less promising sources of uranium will become necessary if the growth in nuclear power approximates the high projection for the 1980-2000 period. 25X1

The INFCE reports do have some reassuring things to say about the likely adequacy of current and planned uranium enrichment facilities for the next 10 to 15 years, the outlook for increased uranium production as a by-product of phosphoric acid production, and the availability of both

*Uranium production under optimum conditions refers to the exploitation of both "reasonably assured" and "additional estimated" reserves at price levels as high as $130 per kilogram. The figures for peak production in the 1990s do not include uranium that might be produced as a by-product from phosphates or extracted from unconventional sources such as seawater or coal. 25X1

**For example, 50,000 tons of uranium per annum might be sufficient in 2025 to meet a low demand market where fast breeders reactors are in extensive use. However, nearly 600,000 tons might be required in a high demand scenario in which new deployments were exclusively light water reactors operated on the once-through fuel cycle. 25X1

heavy water and thorium. Nonetheless, the uncertainties underscored by the range of uranium supply and demand projections presented could provide sufficient "justification" for any nation intent on moving toward a plutonium economy before the millenium is out. 25X1

The issue of assured access to nuclear fuel proved to be even more politically sensitive than the question of uranium availability. Indeed, this issue--which pitted energy-poor nations against those with abundant uranium reserves over the terms of nuclear trade--led to some of the most acrimonious exchanges in the whole INFCE exercise. Many energy-poor industrial and developing nations complained about the "politicization" of the uranium market because supplier states are seeking to impose--in some cases retroactively--additional nuclear safeguards before honoring existing contracts. Passage of the US Nuclear Non-Proliferation Act of 1978 (NNPA), which established new export criteria for existing as well as future contracts, came under harsh attack--especially since there was an informal understanding among INFCE participants that national governments would not undertake any major departures in nuclear energy policies while the Evaluation was in process. 25X1

Under these circumstances, the INFCE working group tasked with examining the fuel assurances problem had an extremely difficult time in drafting a final report. The report that emerged is a carfully-worded document that tries to present the positions of supplier and consumer nations in objective terms. The underlying assumption of the report is that assurances concerning supply and those regarding non-proliferation controls are complementary; that the proper balance of rights and obligations will facilitate the development of nuclear technology for peaceful purposes. For example, while the report acknowledges that supplier states are justified in asking for guarantees about the possible misuse of their nuclear fuel and technology for military purposes, it warns of possible negative consequences if the suppliers try to compel renegotiation of export contracts, particularly with those countries not in breach of previously agreed conditions. Also, arbitrary exercise by suppliers of the power to disapprove the retransfer or reprocessing of

spent fuel is described as likely to contribute to the erosion of confidence among consuming nations in the market mechanism. These observations, which also surface in the TCC summary and overview paper, represent some of the sharpest, if indirect, criticism of US nonproliferation policy in the current drafts of the INFCE documents. 25X1

Despite these criticisms of supplier practices, the report concludes that, in general, the competitive commercial market and the bilateral contractual system upon which the latter is based have worked fairly well and probably will continue to do so for the foreseeable future--a conclusion satisfying to the US and other suppliers that are leery of proposals to place contracts on a multilateral basis. The report does, however, recommend that consumer nations protect themselves by stockpiling uranium and diversifying supply sources in view of the reluctance of supplier nations to relinquish the option of revising contracts when it suits their national or international interests. It also suggests a number of measures that might help to improve confidence in the existing market mechanism. Recommendations having longer term implications for US policy include the following:

--Criteria establishing the conditions under which suppliers can insist on the right of prior consent should be established before the conclusion of long-term supply contracts and imposed only after careful consideration of the consumer nation's energy situation.

--Both parties to supply contracts should establish in advance a mechanism for the periodic review of the non-proliferation conditions and any amendments that may be requested.

--Supplier states should refrain from actions that disrupt the implementation of existing contracts while dicussions are underway concerning amendments in non-proliferation conditions.

--Multilateral arrangements (such as a uranium emergency safety network or an international fuel bank) should be established to assist nations faced with a supply cut-off despite their fulfillment of all non-proliferation conditions.* 25X1

While most of the suggestions and recommendations for facilitating ready access to uranium and other nuclear materials presuppose the continued existence of the competitive commercial market, it is clear that the United States and other supplier nations have been asked to consider fundamental changes in the manner in which they exercise their rights and interpret their obligations. Needless to say, there is considerable skepticism among many energy-poor industrial and developing nations that the principal suppliers of uranium will be willing to show such flexibility. 25X1

The Plutonium Economy

Deep-seated concern among most INFCE participants about restrictions on their access to nuclear fuel and technology greatly complicated what was perhaps the central issue in the entire Evaluation--that is, the desire of several countries to close the back end of the fuel cycle by reprocessing spent fuel and to use the plutonium thus acquired in thermal and fast breeder reactors. The United States argued strongly in favor of the once-through fuel cycle because the latter does not require the potentially proliferation-prone separation and handling of weapons-usable material. The Soviet Union, Japan, and several West European nations argued just as vigorously that it would be foolish to forego the energy potential contained in spent nuclear fuel. They were, moreover, supported by many energy-poor developing nations in their defense of the need and right to keep open the option of moving toward a plutonium economy. 25X1

*The US-sponsored fuel bank proposal, which has so far generated little enthusiasm among INFCE participants, faces a host of problems--not the least of which is the desire of most supplier nations to retain an ultimate veto over whatever nuclear fuel they contribute to the fuel bank. 25X1

Three INFCE working groups dealt directly or indirectly with the controversial issues (e.g., reprocessing) bearing on various aspects of the plutonium fuel cycle question. No final judgment or recommendations were made in favor of any particular fuel cycle, but, on balance, the thrust of their findings tends to strengthen the arguments of those who maintain that the option to reprocess spent fuel and to develop the fast breeder reactor must be preserved in the face of potential major future shortfalls in uranium production. [redacted] 25X1

The problems connected with reprocessing and the fast breeder are clearly acknowledged. The United States succeeded in persuading most participants that the economic advantage in recycling uranium or plutonium in conventional thermal reactors at the present time is marginal and probably will stay that way as long as ample supplies or uranium remain available at close to current cost. This judgment is reflected in the INFCE reports as is the complementary assertion that technological advances offer the possibility of significant improvements in fuel utilization in thermal power reactors using a once-through fuel cycle. [redacted] 25X1

The United States also succeeded in getting an explicit acknowledgement that the commercialization of the fast breeder reactor on any wide scale is not likely to be technically feasible or economically justified before the next century. Indeed, the final reports emphasize that significant deployment of the fast breeder will probably come too late to have any appreciable impact on the international uranium market for the next 20 years. In reaching these conclusions, the INFCE reports take note of the particular problems associated with the fast breeder reactor--such as the requirement for a nation to have a large industrial base and the high capital costs that could under certain circumstances offset whatever fuel savings are achieved by recycling spent fuel.* [redacted] 25X1

*Not surprisingly, the French, who entertain hopes of developing an export market for breeder reactors by the early 1990s, have shown signs of distinct disatisfaction with these particular views. [redacted] 25X1

Despite the cautionary observations, the INFCE reports explicitly acknowledge the concept of reprocessing as essential not only for fast breeder reactors, but also for many other advanced fuel cycles that are under serious consideration in energy poor industrial and developing nations. Furthermore, while the risks of diversion inherent in the separation of plutonium are duly noted, the reports aver that no single judgment concerning the risk of proliferation from different fuel cycles can be made that is valid both now and for the future. Somewhat incongruously, they also advance the estimate that the diversion risks encountered in various stages of the fast breeder reactor fuel cycle are unlikely to present greater difficulties over the long run than those associated with a once-through U/Pu light water reactor fuel cycle.* [redacted] 25X1

Similarly, the INFCE reports temper their appraisal of the obstacles to rapid deployment of fast breeder reactors by noting that uranium price increases could effectively eliminate the competitive economic advantage currently enjoyed by the present generation of light water reactors. The reports also note that the uncertainties surrounding access to enriched uranium could constitute a strong political incentive for energy-poor nations to opt for fast breeder reactors since, in the long run, the latter promise independence from the uranium market. On the basis of these considerations, the INFCE reports conclude that under some circumstances, early deployment of fast breeder reactors in industrial nations with large power programs could serve legitimate needs. And while the reports question the need

*Many INFCE participants opposed to the US no thermal recycle policy argued in Working Group 4 that it is safer to recycle spent fuel in conventional as well as fast breeder reactors than to create "plutonium mines" through long term storage programs. The INFCE reports do not explicitly express this non-proliferation argument in favor of reprocessing, but they note several times that spent fuel becomes an increasingly attractive potential source of plutonium as it becomes less radioactive through long-term storage. [redacted] 25X1

for such deployment to developing countries with large uranium reserves or modest power grids, the do not explicitly reject the idea of fast breeder reactors for developing countries with ambitious nuclear energy programs. 25X1

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In sum, the INFCE final reports do little to undercut the rationale for proceeding with the plutonium economy. Indeed, their analysis of data concerning long-term trends in the uranium market makes clear that the expected decline in production from conventional sources could make a powerful economic argument in favor of the fast breeder reactor.* The additional observation that the fast breeder reactor presents less of a threat in terms of its impact on the environment or population than the once-through light water reactor fuel cycle helps to round out what will appear to many who read the INFCE reports to be a favorable assessment of the logic of the plutonium economy. 25X1

Nonproliferation Concerns

A great deal of attention is paid to nonproliferation concerns in the INFCE reports. All address the problem of possible diversion of weapons-usable material at appropriate points and several (including the TCC's summary and overview report) contain lengthy sections dealing exclusively with the assessment or management of proliferation risks. Nonetheless, the basic thrust of the message that emerges from these documents reconfirms the primacy that energy security considerations were accorded in the declaration adopted at the inaugural INFCE plenary session over two years ago. 25X1

In specific terms, the reports assert that 1) nuclear energy is expected to increase its role in meeting the

*The INFCE final reports also state that extensive deployment of the fast breeder reactor in the early part of the next century could have the added benefit of keeping conventional reactors economically viable because it would reduce the pressure on the uranium market.

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world's energy needs over the next half century; 2) proliferation is primarily a political and not a technical matter; and 3) the construction and planned misuse of fuel cycle facilities is not the easiest nor the most efficient route to acquire materials for the manufacture of nuclear weapons. Proceeding from these premises, the reports identify those points in various nuclear fuel cycles that are sensitive from the standpoint of possible diversion of weapons-usable material and assess the measures which are now--or which could be--employed to minimize proliferation risks. As indicated earlier, the reports conclude that, because so many factors are involved (including the nature of existing safeguards and overall stage of nuclear development in particular countries), no single judgment about the risk of proliferation from any given fuel cycle can be made that is valid both now and for the future. 25X1

The findings presented in the INFCE reports with respect to measures for minimizing proliferation risks are somewhat closer to US positions. There are, however, some important exceptions. 25X1

The INFCE reports group these measures into three general categories: technical steps, safeguards, and institutional arrangements. Technical measures (e.g., physical barriers, radioactive spiking, and co-processing) are judged potentially quite effective in preventing subnational theft but generally of limited utility in reducing proliferation risks. Those technical fixes cited as possible exceptions in the latter regard (e.g., research reactor fuels of lower enrichment and co-conversion) are few and, for the most part, pictured as problematic or at least distant developments. 25X1

In contrast, safeguards are extolled by the INFCE reports as currently the most promising means to control proliferation risks. The working groups found no problems with current safeguard methods as they are applied to existing operating plants, but further improvements were deemed necessary to meet future challenges posed by new facilities and technologies associated with all stages of the fuel

cycle. In this regard, it is important to note that while the INFCE documents carefully describe the differences between IAEA and full-scope safeguards, the latter are not presented as inherently more desirable. [redacted] 25X1

The INFCE documents portray possible new institutional arrangements (e.g., multinational fuel cycle or plutonium storage centers) as potentially important to both minimizing proliferation risks and increasing assurance of supply--objectives which, as indicated earlier, the majority of INFCE participants maintain are inherently complementary.* In view of the formidable array of political and economic obstacles that will have to be overcome, however, the reports indicate that the development of such arrangements is likely to be at best a gradual evolutionary process. [redacted] 25X1

Special Needs of Developing Countries

Developing countries present at the INFCE organizational conference in October 1977 lobbied for the establishment of a separate working group to examine their special needs, such as unhampered transfer of technology and materials. The polarization of the Evaluation along North-South lines that creation of such a group might have precipitated was avoided through a compromise under which the findings of an IAEA study on LDC nuclear requirements were incorporated into the INFCE reports. In addition, each working group was instructed to take particular note of the needs of developing countries. [redacted] 25X1

*The Working Group 3 (Fuel Assurances) report argues the interrelationship of nonproliferation objectives and assured fuel supplies at greatest length. It stresses the possibility that concern over energy security may prompt some countries to attempt to acquire the nuclear technology to close the fuel cycle, thereby incidentally increasing their capability to develop nuclear weapons should they decide to do so. To meet the concerns of both nuclear suppliers and consumers, the working group suggested the development of such mechanisms for the management of nonproliferation policy as a treaty on the peaceful uses of nuclear energy. [redacted] 25X1

After the organizational conference, at which many of the developing country delegates made impassioned speeches in support of their parochial positions, Third World interest in INFCE dropped off sharply. This was due in part to the fact that the strong response of the advanced nuclear nations to many US nonproliferation views and initiatives stole much of the LDCs' thunder and made vigorous agitation unnecessary. The costs, both in financial and personnel terms, also discouraged active developing country participation. Finally, many of the developing countries may have decided that the heavily technical emphasis of INFCE offered a poor forum for pressing their largely political demands. [redacted] 25X1

Despite the low level of developing country participation, several of the INFCE reports, including the summary and oOverview document, contain separate sections addressing their special needs. These sections reaffirm the inalienable right of all countries to use nuclear power for economic and social development. They also criticize existing multilateral and international technical and economic assistance mechanisms (e.g., the IAEA and the UNDP) for so far failing to meet the special needs of developing countries--particularly with respect to technology transfer and the training of skilled personnel. In addition, these sections argue that, because unexpected changes in the terms or implementation of nuclear supply agreements are likely to have more serious consequences for developing countries than for industrialized countries, additional multilateral or international mechanisms are needed to guarantee developing countries timely deliveries in the event of cut-off or delay of their normal supplies.

[redacted] 25X1

The reports recommend a number of changes in IAEA programs and supplier practices that might alleviate the problems associated with what will inevitably be a relatively long-term dependence of most developing countries on advanced nuclear states for fuel and technology. But while the INFCE documents acknowledge that some developing countries are seeking fuel cycle independence and affirm their right to reprocess spent fuel, they reflect an underlying premise that national nuclear power programs should follow a natural

evolutionary course and that--by extension--facilties like enrichment or reprocessing plants should not be built until a country's nuclear power program is sufficiently large to justify them. The reports suggest that, in the interim, it is more appropriate for developing countries to rely on national or multinational fuel cycle facilities established by advanced nuclear nations. 25X1

Some LDCs--particularly those with ambitious nuclear plans--are likely to find this "discriminatory bias" in favor of the industrial nations galling. Their displeasure may offset their satisfaction with other aspects of the treatment of developing country interests in the INFCE reports. It is uncertain whether or not they will choose to air this particular grievance at the INFCE Plenary, but even if they do not, the issue is likely to surface in debates at the NPT Review Conference this August. 25X1

The INFCE Plenary

Since most of the initial differences over the wording of the working group reports and the summary paper have been resolved through the efforts of the INFCE Technical Coordinating Committee, the Plenary could be a relatively low key and pro-forma affair. Whether or not this is the case, however, will depend upon a number of still uncertain factors --some of which will not become clear until the proceedings are actually underway. 25X1

The first, and perhaps most critical, of these potentially disruptive problem areas concerns the controversial mini-summary document prepared by the TCC as a possible briefing paper for the media and senior government officials. The TCC will meet for a final time on 22 and 23 February to determine whether unanimous approval can be obtained for some revised version of this currently heavily bracketed document. If not, the paper will not be submitted to the Plenary for its consideration--and the sensitive question of the form and content of the Plenary's final communique will remain to be resolved by the 71 participating delegations. Such a development, which at present still appears distinctly

possible, would not necessarily trigger acrimonious debate, but it could well complicate the selection of the Plenary Chariman and incline a number of INFCE participants to increase the political content of statements made for the record both during and after the proceedings. [redacted] 25X1

Some controversy already surrounds the issue of plenary chairmanship. While the "leading candidate," UK Department of Energy Chief Scientist Sir Herman Bondi, personally enjoys wide international esteem, he reportedly is opposed by some INFCE participants on the grounds that the chairman should not be a national of a nuclear weapons state.* While it is difficult to gauge just how widespread and deeply-held these feelings are at present, it seems likely that opposition to the Bondi candidacy would sharpen if it appeared that the chairman might be called upon to play a significant substantive role in shaping the public outcome of the INFCE process. [redacted] 25X1

Once the chairman is selected, the process of presenting and approving the eight working group reports and the summary and overview report will probably evoke little controversy. The same cannot be said with any degree of confidence for the series of delegation statements that will follow. Although we have no information to suggest that any INFCE participant is planning a polemical attack on the Evaluation exercise or the global nonproliferation regime, the behavior of the nuclear militants (especially those, like India and Argentina, for whom the NPT Review Conference does not easily offer a more attractive alternative forum) could prove troublesome. In any event, the fact that most plenary delegations will include one or more relatively high-level political officials will increase the chances of posturing. We have, for example, forewarning that the Secretary General of the Agency for the Prohibition of Nuclear Weapons in

*Other individuals who have been mentioned as possible candidates include Dr. Manfred Popp of West Germany, Claude Zangger of Switzerland (the Chairman of the NPT Exporters Committee), and Atsuhiko Yatabe of Japan. [redacted] 25X1

Latin America (OPANAL) intends to make a strong statement on behalf of the 22 Latin American parties to the Treaty of Tlateloco stressing the incontestible right of OPANAL members to the peaceful use of nuclear energy and the inadmissiability of arbitrary and discriminatory practices on the part of nuclear suppliers. Hence, whether or not the atmosphere has been charged by debate over the press communique issue, the presentations by the delegations could prove lively. Since the US has asked to speak first, much may depend upon the tone and approach it adopts. [redacted] 25X1

As has been the case during the final preparations for the conference, such maneuvering that does occur in Vienna will be oriented toward establishing the nature and limits of the impact that INFCE will have on the global nuclear environment.* In this regard, the informal discussions that will take place on the fringes of the INFCE Plenary could be of considerable importance. Indeed, much of this peripheral dialogue is expected to center on alternative proposals (one advanced by IAEA Secretary General Eklund at the IAEA General Conference in New Delhi last December and the other informally pressed by the US) for the establishment of a body within IAEA to address the problem of nuclear fuel supply guarantees.** Secretary General Eklund believes it to be very important that some such entity by established in time for it to meet at least once before the August NPT Review Conference. Hence he hopes to take advantage of the presence of the INFCE delegations in Vienna to obtain agreement on the wording of a proposal to this effect that could

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*One of the more significant pre-plenary developments was the recent approval in prinicple of three draft EC council resolutions setting forth a common EC approach to radioactive waste management, reprocessing of spent fuels, and breeder reactors. [redacted] 25X1

*The US, which opposes Secretary General Eklund's "committee of the whole" approach as likely to engender a politicized attempt to alter terms of trade, has suggested establishment of a purely technical committee of experts to study the supply assurances problems. [redacted] 25X1

be considered and adopted by the IAEA Board of Governors at its next meeting in March. Since available information on the positions of most other INFCE participants is fragmentary and, in some cases, contradictory, the outcome of his efforts to establish such a consensus is uncertain. But it could have significant implications for both the NPT Review Conference and US nonproliferation policy. 25X1

The Implications of INFCE

Even though the Evaluation's findings will not be binding on national governments, the conclusion of INFCE may represent something of a benchmark in the international dialogue concerning nuclear energy and nonproliferation. The Evaluation was an important element in Washington's effort to develop a new consensus that would discourage the spread of sensitive nuclear technology. As an educational process, the INFCE exercise fostered deeper awareness of proliferatoin risks and, to a certain extent at least, promoted a better understanding of the assumptions underlying Washington's restrictive nuclear export policy. 25X1

Furthermore, INFCE's working group reports as a whole constitute the most sophisticated analysis yet undertaken of the various factors national government should weigh when making a major commitment to the development of nuclear power programs. The INFCE reports are unique because, unlike most other comparable studies, they go beyond purely technical concerns and bring together the political, economic, and social considerations that also bear upon any decision to acquire advanced nuclear technology. It is clear that while the Evaluation does not provide definitive judgments on many controversial issues pertaining to the nuclear fuel cycle, it has made an important contribution toward the establishment of a common analytical framework for future international discussion. 25X1

This does not mean that all INFCE participants will "pause" to reevaluate their own nuclear policies in light of the INFCE findings. On the contrary, even during the evaluation several participating nations such as Japan, Argentina,

and India proceeded to acquire or develop advanced nuclear technologies. Passage of the Nuclear Non-Proliferation Act (NNPA) shortly after INFCE began made it easier for these nations to rationalize their actions in the face of what appeared to them to be a US failure to abide by the informal understanding that there would be a moratorium on major policy decisions while INFCE was in progress. Nevertheless, countries that have not yet committed themselves to the plutonium economy might hesistate to do so in view of the costs and risks cited in the INFCE documents as inherent in any attempt to close the back end of the fuel cycle. Certainly, many INFCE participants now have a different perception of when and under what circumstances advanced nuclear technologies are likely to be of any economic benefit.

25X1

In the final analysis, however, INFCE confirms the fundamental right of national governments to prepare for the evenuual development of the plutonium-based fuel cycle. It is in this deeper sense that some might term INFCE a "turning point" in the international dialogue on nuclear energy. Indeed, many industrial and developing nations participating in the Evaluation seem to believe that they have "turned" INFCE against the United States, thereby blunting Washington's effort to tighten the rules governing nuclear commerce. From this perspective, INFCE's negative comments on restrictive export policies and implicit endorsement of the plutonium economy symbolize Washington's inability to sustain momentum behind what many INFCE participants originally considered to be a perfectionist nonproliferation policy. In this regard, recent indications that the US is no longer willing to implement the full letter of its nonproliferation policy with regard to Pakistan and India seem likely to reinforce suspicions that INFCE's findings are essentially a commentary on the increasingly pragmatic character of US nonproliferation policy.

25X1

"Turning point" is, however, too strong a term. With the gains achieved by both the proponents of energy security and those who attach equal or greater importance to nonproliferation concerns, what seems to have emerged is a stand-off--one which, if not jarred by unforeseen developments

(e.g., the sudden entry of several new members into the nuclear weapons club), could endure for quite some time. Incremental change--such as introduction of improved safeguard techniques--will be possible, but most INFCE participants will probably be unwilling to move very far from the positions they have established and legitimized in the Evaluation documents. In this atmosphere, the US may find further progress toward full-scope safeguards particularly difficult to achieve. And just as Washington cannot expect to win much support for any early international reexamination of the plutonium fuel cycle question, so the less developed nations cannot realistically hope to draw the major nuclear exporters into discussions designed to alter the existing commercial market mechanism for negotiating uranium fuel supply contracts in any fundamental way. 25X1

While there is little reason to expect another INFCE-type review of the entire nuclear fuel cycle for some time, the demand among consumer countries for greater appreciation of their need to acquire advanced nuclear technology for peaceful purposes will not be laid to rest. Indeed, the stress the INFCE documents place on consumer state needs for assured access to nuclear fuel and technology might be used to reinforce demands at the NPT Review Conference for greater supplier state compliance with the NPT undertaking, contained in Article IV, to "facilitate...the fullest possible exchange of equipment, materials and scientific and technological information for the peaceful uses of nuclear energy." Moreover, if OPANAL's planned assertion of the need for a more formal and explicit reciprocal link between guaranteed access to peaceful uses of nuclear energy and the international safeguards system is well received at the INFCE plenary, it could well become a rallying point for nuclear consumer demands at the NPT Review Conference--perhaps in the form of a proposed amendment to the Treaty. 25X1